## A METHOD FOR PRODUCING ACCURATELY PROPORTIONED OUTLINE DRAWINGS OF INSECTS

## IAN MOORE

## Division of Biological Control Citrus Research Center and Agricultural Experiment Station University of California, Riverside, CA

Outline drawings can be one of the most useful aids to identification of insects whether they be in manuals or in generic revisions. Some people have a natural ability to draw accurately proportional outlines. Most of us lack this facility.

A number of devices are used to overcome the natural inability to get good outlines by freehand. One of these is the effective but tedious use of quadrilled paper in conjunction with a ruled ocular in the microscope. Very good results can be achieved with this method, but it is time consuming. The drawbacks to the camera-lucida are apparent to anyone who has used one. The use of the drawing tube microscope attachment is limited to slide mounts for satisfactory results.

The following technique has proved to be reasonably fast and accurate with both large and small specimens. It requires a Polaroid Automatic 350 Land camera with the necessary attachments and adaptors for an ordinary dissecting microscope. The advantage of the Polaroid camera is that the first picture is developed in a matter of seconds. If additional photos are required, the specimen may at once be repositioned or the light adjusted if necessary for a sharper, better defined picture. My photographic technique is so poor that I have yet to produce a photograph suitable for reproduction in itself, but I can get a good outline of the insect after 1 or 2 attempts. The photo is enlarged to the appropriate size, and an outline drawing in pencil is made on tracing paper. Then, using a tracing table, an ultimate outline drawing, again is made in pencil on quality drawing paper from the first tracing. The last step is inking the drawing.

Throughout this process, the correct proportion of the various parts of the insect are maintained. Details can be filled in if so desired by those who have the artistic ability to do so.